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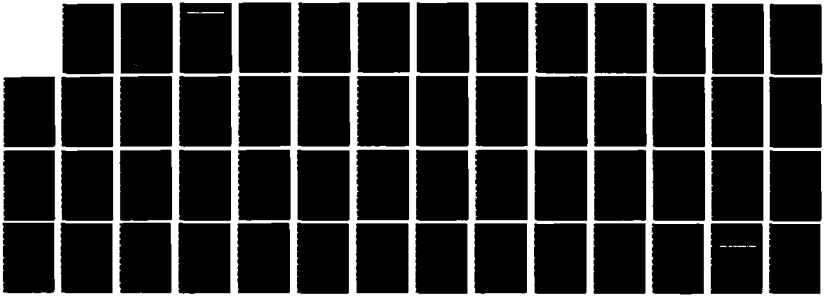

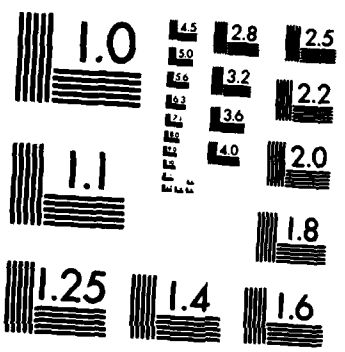

David W. Taylor Naval Ship Research and Development Center

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Computation, Mathematics, and Logistics Department
Research and Development Report

Corvus Disk Operating System (CorDos) User's Manual

by
Perry L. Price

DTNSRDC-86/034 Corvus Disk Operating System (CorDos) User's Manual

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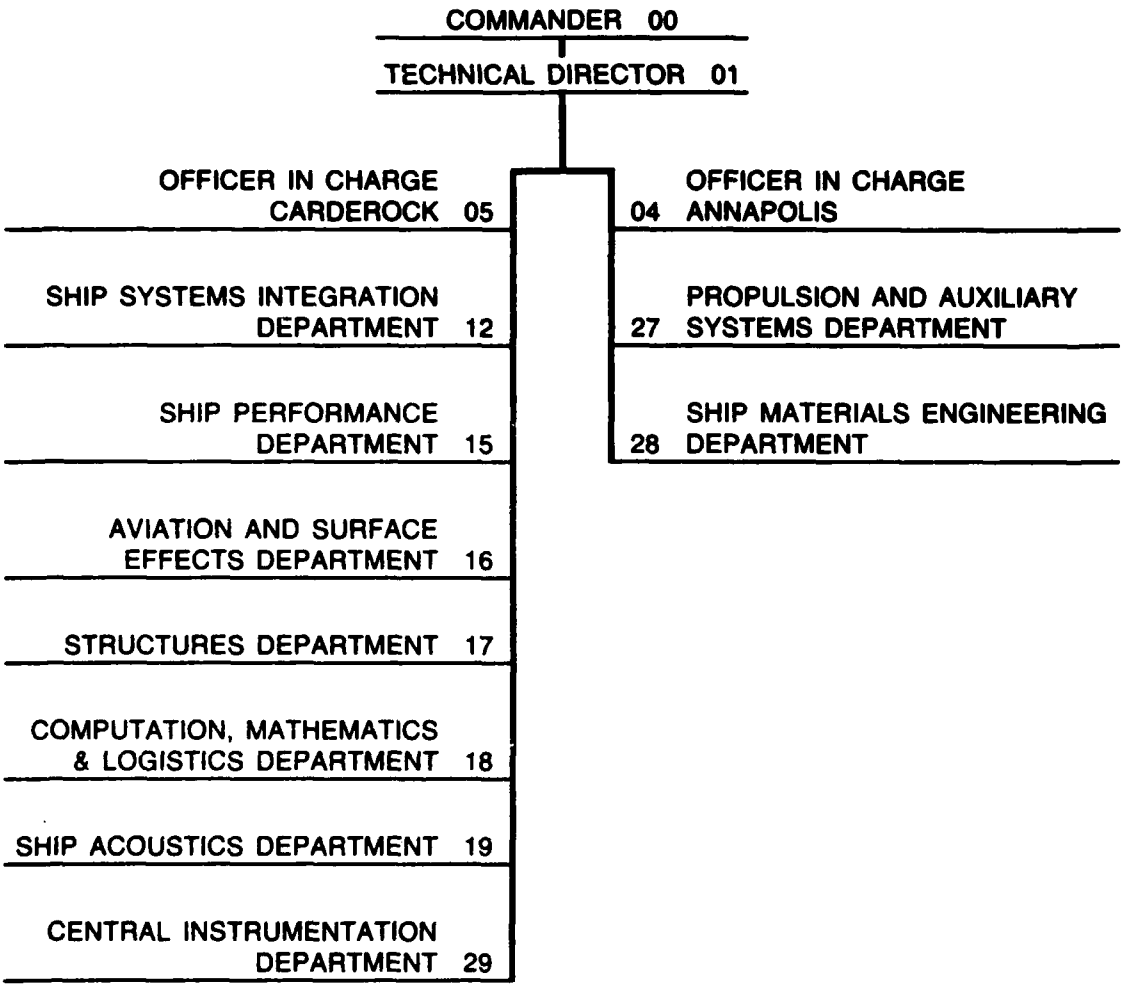

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This report is a user's manual for the CorDos 1.2 Disk Operating System as used by the Naval Supply Systems Command's Computer Aided Warehouse Design System. CorDos 1.2 is operational on the Radio Shack Model II microcomputer. Under CorDos, the capability of the Computer Aided Warehouse Design System to produce voice and printed output in addition to normal screen display and printed output is maintained. Voice output was designed into the workstation to allow use of the workstation by a totally blind user who could not function independently at the workstation without voice output. For users not requiring voice output, CorDos functions without any loss of capabilities. This users manual describes CorDos for use with and without voice output.

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ABSTRACT

This report is a user's manual for the CorDos 1.2 Disk Operating System as used by the Naval Supply Systems Command's Computer Aided Warehouse Design System. CorDos 1.2 is operational on the Radio Shack Model II microcomputer. CorDos is used with the Corvus hard disk system. Under CorDos, the capability of the Computer Aided Warehouse Design System to produce voice and printed output in addition to normal screen display and printed output is maintained. Voice output was designed into the workstation to allow use of the workstation by a totally blind user who could not function independently at the workstation without voice output. For users not requiring voice output, CorDos functions without any loss of capabilities. This users manual describes CorDos for use with and without voice output.

ADMINISTRATIVE INFORMATION

This user's manual was developed as a task of the Computer Aided Warehouse Design Project under initial sponsorship of the Research and Technology Division (PML5505) of the Naval Supply Systems Command (NAVSUP) and completed as a subtask of Task 11 of the Supproject Program Plan RT 60531 of the Logistics Block Program. NAVSUP Code 0622, the Warehousing Branch of the Material and Facilities Division was the functional manager of the task. The task was performed at the David W. Taylor Naval Ship Research and Development Center by the Logistics Division (Code 187) of the Computation, Mathematics, and Logistics Department under Program Element 627690N, Project F60531, Task Area TF 60531200, and Work Units 1872-422 and 1870-702.

SECTION 1

INTRODUCTION

1.1 OVERVIEW

This report is a user's manual for the CorDos 1.2 Operating system as used by the Naval Supply Systems Command (NAVSUP) data processing workstation for Computer Aided Warehouse Design. It is organized into three sections and three appendixes. Section 1 presents general introductory information highlighting the background and motivation for acquiring the CorDos 1.2 operating system. Section 2 describes the CorDos 1.2 operating system in detail, including a description of the microcomputer's configuration under CorDos. Where applicable, analogies are made to TRSDOS, the operating system replaced by CORDOS. Section 3 describes the workstation use under CorDos 1.2, including how to transition from TRSDOS, using floppy diskettes, to CorDos using the Corvus hard disk and how to backup hard disk files to video tape.

1.2 BACKGROUND

NAVSUP, under the sponsorship of PML5505 and functional management of Code 0622C, tasked the Logistics Division of the David W. Taylor Naval Ship R&D Center (DTNSRDC) to update the Naval Supply Systems Command Publication 529 (NAVSUP Pub 529), to develop software to computerize the system selection criteria of NAVSUP Pub 529, to established an ADP workstation within NAVSUP 0622C, to train users of the workstation, and to perform other tasks of the Computer Aided Warehouse Design Project. To accomplish its objectives, DTNSRDC contracted with the Sims Consulting Group of Lancaster, Ohio to assist with the update of NAVSUP Pub 529 and with Computorizm Developers of Clinton, Kentucky to assist in customizing the ADP workstation for the functions desired. The software to computerize NAVSUP Pub 529 was developed by DTNSRDC.

A Computer Aided Warehouse Design Workstation was established in early 1983 and has been operational for general data processing since that time. The workstation was designed around the Radio Shack Model II microcomputer which operates under TRSDOS, the operating system supplied by Radio Shack for this microcomputer. A unique feature of the workstation is its ability to produce voice output in addition to normal screen display and printed output to facilitate workstation use by a blind operator. The workstation has since been upgraded by the acquisition of the Corvus hard disk system and the CorDos 1.2 operating system. Under CorDos, programs and data files are stored on a single hard disk and the use of floppy diskettes is almost eliminated. The Corvus system is a significant advancement in the efficiency and productivity of the workstation.

1.3. SCOPE

This report describes the workstation as it functions under the Corvus disk operating system (CorDos). Workstation components that are not a part of the Corvus system are not addressed. Operating system commands are the only software addressed in detail. Application software is addressed only in terms of how to transfer it from floppy diskette to the Corvus hard disk drive, and how to execute it from the Corvus disk drive.

SECTION 2

CORDOS 1.2 OPERATING SYSTEM

2.1 DESCRIPTION

CorDos 1.2 stands for version 1.2 of the Corvus Disk Operating System. Corvus, like any disk operating system, tells the microcomputer how to deal with disk drives and other software and hardware components of the system. CorDos tells the Radio Shack Model II microcomputer how to deal with the Corvus disk system. CorDos is an enhancement to TRSDOS, the disk operating system supplied with the Radio Shack Model II microcomputer, and is not a replacement for it. This enhancement, developed by Computorizm Developers, was necessary to enable the Radio Shack Model II microcomputer to function with the Corvus disk drive, a far more versatile disk storage system than the floppy diskette system under TRSDOS.

The Corvus system is a hard disk drive system. Hard disks are rigid, not flexible like floppy diskettes. Hard disks operate within very precise conditions. The read head of the hard disk drive does not come into direct contact with the disk as does the read head of a floppy disk. Rather, it rides on a cushion of air about one ten-thousandths of an inch above the disk. Any foreign matter, including smoke particles, between the read head and the disk will cause a malfunction known as a head crash. For this reason the Corvus disk is sealed in an air-tight housing so that it does not come into contact with the outside environment where dust particles could cause malfunctions and the loss of data.

Fast access to stored data is one of the powerful features of CorDos. The speed at which the disk rotates (approximately 3600 revolutions per minute compared to 300 to 400 revolutions per minute for floppy diskettes) contributes to fast data access. Faster rotation means faster input and output operations and therefore more productivity from the workstation.

The master menu concept is another powerful feature of CorDos. This feature can be used to customize the workstation for the most frequently used applications to be performed. Software can be executed from the menu with little user need for CorDos or TRSDOS commands. A master menu provides for the execution of frequently used applications. The user simply selects the application from the master menu, and CorDos then performs the functions, eliminating the manual tasks of locating diskettes, inserting them into the proper disk drives, and issuing the commands that cause the software to be executed. The master menu also contributes to the user friendliness of the workstation in that users do not have to be experienced computer users to function at the workstation using software developed for the workstation by DTNSRDC. However, for users who want to set up applications not available on the master menu, CorDos has a simple command structure which is described in Section 2.4.

The Corvus hard disk system for the Computer Aided Warehouse Design Workstation has the following advantages:

-It eliminates the need for handling and managing a large library of floppy diskettes.

-It eliminates hazards to disk storage caused by dust, scratches, theft, and other problems associated with floppy diskette use.

-It increases workstation efficiency by providing faster access to stored data and faster transfer of data to storage.

The implementation of CorDos almost eliminates the use of floppy diskettes, although they cannot be eliminated totally. One floppy diskette is needed for system startup, but after startup no additional diskettes are required. The use of a CorDos diskette during start up makes it very easy to bypass CorDos and operate under TRSDOS. A TRSDOS user who is not familiar with CorDos may wish to use this feature.

CorDos is flexible and easy to learn. The greatest adjustment a TRSDOS user must make is in getting used to functioning at the workstation without physically handling and managing a large set of floppy diskettes.

2.2 SYSTEM COMPONENTS

Figure 1 shows all components of the workstation. The Corvus hard disk drive and video cassette recorder (VCR) data backup system are the visible hardware components required by CorDos. Another component of the Corvus system is a circuit board installed inside the microcomputer. A flat ribbon cable leads from this circuit board to the Corvus disk drive. The workstation user's manual[1*] gives operating procedures for all components of the workstation except the Corvus hard disk drive and the (VCR) data backup system, which are addressed in the two following sections.

2.2.1 Corvus Hard Disk Drive

The workstation component for program and data storage is the Corvus hard disk drive. This disk drive has a storage capacity of 20 million bytes, about 19 million of which are available for user's programs and data.

The flat ribbon cable leading from the back of the Radio Shack microcomputer is connected to the Corvus port labeled PROCESSOR. This port is one of two ports on the back of the Corvus disk drive. These two 34-pin ports are on the back panel of the Corvus just to the right and above the center of the back panel. The port labeled PROCESSOR is above the other port which is labeled DRIVE. The port labeled DRIVE is used to connect a second Corvus drive to the microcomputer. Up to four

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*A complete listing of references is given on page 47.

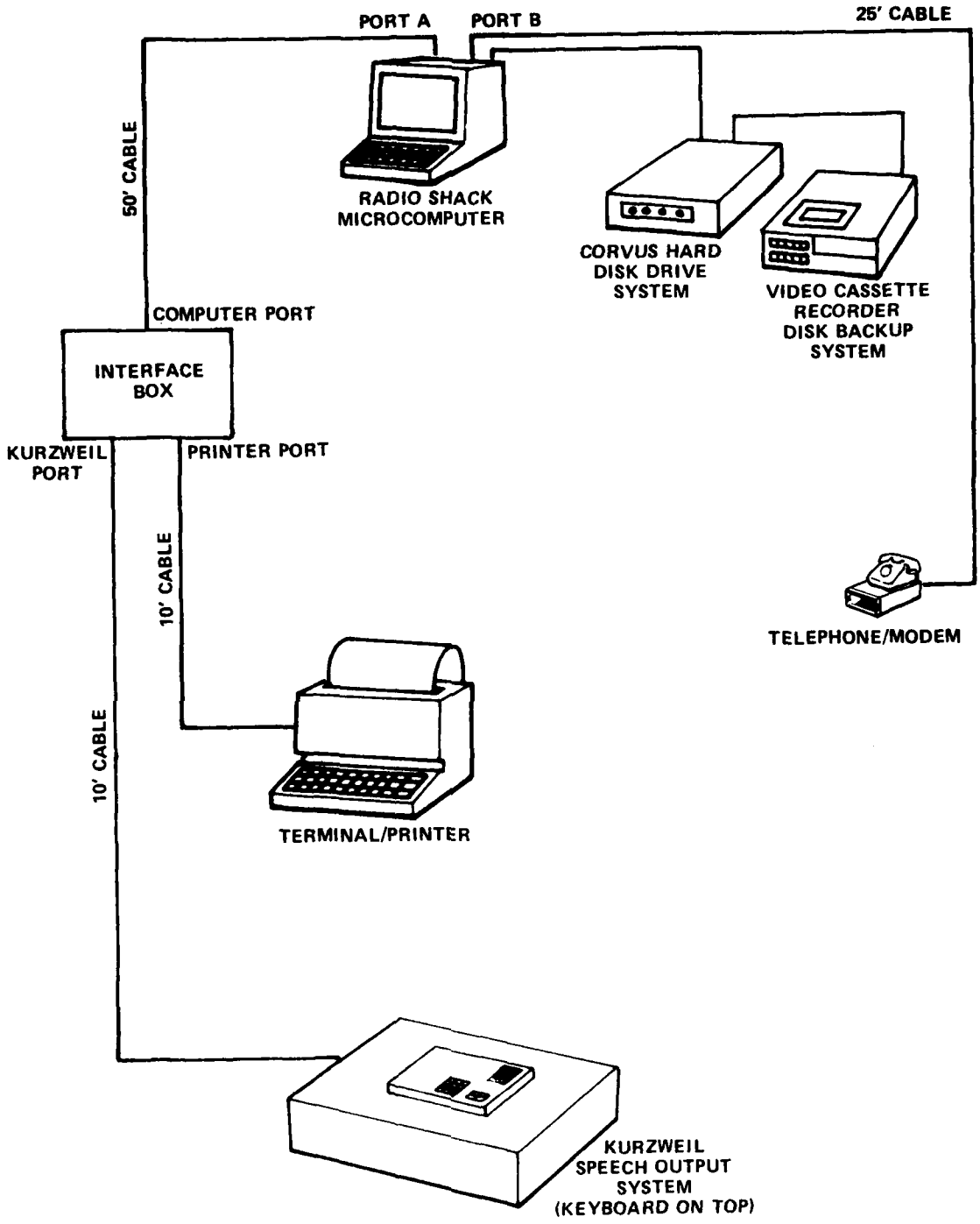

Figure 1 - Workstation Components and Layout

Corvus drives may be connected in this manner. Each Corvus drive has its own power supply and must be plugged into a 120-volt socket.

One bank of four dip switches is located just to the left of the two 34-pin ports. These dip switches should always be in the down position.

The VIDEO-IN and VIDEO-OUT ports are located one above the other on the left side of the back panel. The VIDEO-IN port is on top. The VCR remote cable connection is just to the right of the VIDEO-IN and VIDEO-OUT ports. This VCR remote cable connection is not used in the NAVSUP workstation.

A fuse box is located in the lower right corner of the back panel. The fuse box has several candidate slots for the one fuse required; each slot represents a different voltage setting. The fuse must be placed in the slot representing 120 volts. An incorrect placement of the fuse will cause damage to the disk drive and any data stored on the disk. The fuse box should not be opened unless a disk malfunction indicates a blown fuse. Replacement fuses can be purchased from an electronics supply store.

The power on and off switch is a rocker switch located at the lower right side of the back panel. When the power is turned on, the cooling fan can be heard and the air motion felt. The Corvus should not be operated in a closed cabinet or with the back panel facing a wall or other object which degrades the effect of the cooling fan.

The front panel of the Corvus contains three indicator lights which glow red under certain conditions. The top half of the front panel protrudes about one-half inch. Four switches are located directly under the lip of the protrusion. The normal position of each switch is to the left. The switch to the extreme right is the reset switch. It is sometimes necessary to reset the drive by pushing the reset switch to the right. This switch is spring loaded and will return to the

initial position when released. Section 3 describes the specific actions to take with regard to the Corvus drive during startup of the workstation. A more detailed description of the Corvus disk system is contained in the Corvus manual.[2]

2.2.2 Video Cassette Recorder Data Backup System

A reliable and efficient data backup system is extremely important for large capacity hard disk systems. Hard disk systems, unlike floppy diskette systems, do not distribute the data library among several separate storage media; the entire data library is on one disk. A loss or failure of this one hard disk would mean the loss of all programs and data at once.

A hard disk can be backed up to floppy diskettes, but it would be very time consuming for large files or for the entire disk to be backed up in this manner. Forty or more floppy diskettes would be required to back up the 20 million bytes of the Corvus disk and the transfer would take approximately 3 hours. It may not be necessary to back up the entire disk everyday. Individual files can be backed up in less time, but in a multi-user system such as the NAVSUP workstation diskette management could become a significant task. However, any backup system involving floppy diskettes negates many of the benefits of having a hard disk system.

Corvus developed an effective and relatively low-cost system for data back-up for the Corvus hard disk drive system known as the Corvus MIRROR. The Corvus MIRROR uses a video cassette recorder (VCR) and video cassettes. The Corvus MIRROR creates an "image" or copy of either individual blocks of data or the entire hard disk on a video cassette. The entire 20 million bytes of the hard drive can be backed up on a video cassette tape in about 37 minutes.

The VCR acquired for the workstation is the Panasonic Omnivision PV-1220, which uses VHS format video tapes. The VCR is connected to the Corvus by standard audio jacks and cables. The VIDEO-IN on the VCR is connected to VIDEO-OUT on the Corvus and VIDEO-OUT on the VCR is connected to VIDEO-IN on the Corvus. The jacks on the back on the VCR are clearly labeled.

The control switches on the protruding part of the front panel of the VCR are toggle (push to turn on and push to turn off) switches. Two switches are located in the recessed part of the front panel. The left switch is a 3-position slide switch which controls the tape speed. When the power to the VCR is on, the display screen on the front panel will show the setting for this switch as SP, LP, or SLP. This switch should always be set to SLP.

The switch next to the tape speed selection is a thumb screw switch for tracking control. This switch has an indentation to mark the zero point. The zero point is also indicated during the rotation of this switch by a distinctive interruption to smooth rotation. The tracking switch should always be set to zero. A more detailed description of the VCR is contained in the Manual[3] for the Panasonic Ominivision VCR.

2.3 SYSTEM CONFIGURATION

The only visible change to the workstation configuration under CorDos is the addition of the Corvus hard disk drive and the Video Cassette Recorder. The primary configuration changes under CorDos relate to organization of data and programs and to the access to these programs and data for use. CorDos mechanism for managing the storage on the Corvus hard disk drive and the access to this storage makes operating under CorDos similar to operating under TRSDOS. The next two sections of this report will describe the CorDos configuration for data storage and access, respectively.

2.3.1 Data Storage Configuration

Hard disks have such large capacities compared to floppy diskettes that some means is needed to partition the hard disk storage into manageable blocks for storage and access. The CorDos technique for managing program and data files partitions the storage on the hard disk into blocks which can be addressed and managed like floppy diskettes under TRSDOS. The sizes of these blocks, called volumes, are established by the workstation System Manager and can be as small as 100,000 bytes or as large as 16.6 megabytes. These volumes can be used to store the programs and data normally contained on one or more floppy diskettes. Once the System Manager has configured the hard disk into volumes and transferred the programs and data from the floppy diskettes into the hard disk volumes, the system is set up so that the volumes can be used from the hard disk and there is no more need to handle the floppy diskettes.

CorDos volumes are handled like floppy diskettes under TRSDOS. Volumes have directories which can be displayed on the screen or printed on paper using normal TRSDOS commands. Files can be moved from volume to volume or backed up on the same volume or on another volume using TRSDOS commands.

2.3.2 Data Access Configuration

Access to data and programs of the Corvus volumes is done in a manner analogous to the way that data and programs are accessed from floppy diskettes under TRSDOS. Under TRSDOS, a user locates the desired diskettes and inserts them into floppy disk drives. The CorDos mechanism for creating a TRSDOS-like environment for data access is to provide up to eight "simulated" disk drives and commands to perform functions analogous to inserting and removing diskettes from these "simulated" disk drives. To access a program or data under CorDos, the user must determine which CorDos volume contains the data or program and then issue the CorDos command to perform the

function analogous to inserting that volume into one of the "simulated" disk drives. The eight "simulated" drives will be referred to as CorDos drives to distinguish them from the Corvus disk drive.

The CorDos drives must be dealt with as if they existed as physical entities, i.e., disk drives under TRSDOS. The primary difference between TRSDOS and CorDos drives is that, under CorDos, the user does not physically handle volumes but performs a similar function with CorDos commands.

2.4 CORDOS COMMANDS

The system prompt under CorDos is "CorDos Ready". This prompt serves the same function as "TRSDOS READY" under TRSDOS. Either CorDos or TRSDOS commands can be issued at the "CorDos Ready" prompt, but CorDos commands must be preceded by C and a space to indicate that the command to follow is a CorDos command. Commands not preceded by a C are interpreted by CorDos as TRSDOS commands. Except for commands that deal with floppy diskettes only, such as BACKUP and FORMAT, TRSDOS commands are applicable under CorDos.

CorDos commands are used primarily to set up access to files on the Corvus hard disk system. After access has been established, TRSDOS commands are used for most applications.

The CorDos command structure is of the form:

C COMMAND PARA(s)

where C indicates that the command to follow is a CorDos command and not a TRSDOS command. COMMAND is any CorDos command and PARA(s) are optional or required parameters.

The most frequently used CorDos commands are the four commands dealing with access to CorDos volumes. Volumes for the workstation were established during the initial set up of the workstation under CorDos by DTNSRDC in accordance with the functions to be performed in the workstation. Defining or re-defining volumes should not often be required. Instructions on establishing new volumes or modifying existing volumes are given in Section 3.4. New volumes should be established only by the System Manager, because volume configuration must consider all users and all functions of the workstation in a multi-user workstation such as the Computer Aided Warehouse Design workstation.

For the purpose of this report all CorDos commands have been grouped into two categories: file access and system management.

2.4.1 File Access Commands

The following four commands deal with establishing access to files under CorDos:

1. C MOUNT #, where # is a number from 0-7. C MOUNT # is the CorDos command which performs the task analogous to connecting TRSDOS disk drives to the microcomputer. CorDos disk drives, unlike TRSDOS disk drives, do not remain connected. The user can connect and disconnect the "simulated" CorDos disk drives as needed for the application to be executed by issuing the proper commands. The command:

C MOUNT 3

tells CorDos to connect three CorDos disk drives. The eight CorDos drives are numbered consecutively, starting with zero. The command C MOUNT 3 tells CorDos to connect CorDos drives 0, 1, and 2.

2. C MOUNT volname:# is the CorDos command that performs the task analogous to inserting a diskette into a floppy disk drive under TRSDOS. Volname is the name

of the CorDos volume to be MOUNTed and # is the number of the CorDos drive to contain the volume. CorDos volumes are named, using a maximum of eight characters, at the time they are established. The command:

C MOUNT VISICALC:3

has the effect of inserting the diskette named VISICALC into disk drive 3. (NOTE: The C MOUNT # command to connect at least four CorDos drives must precede the C MOUNT VISICALC:3 command.) CorDos volumes can be password protected just like diskettes under TRSDOS. The CorDos command structure to indicate the password is the same as that of TRSDOS. If the CorDos volume, VISICALC, were password protected with the password "navy1" in the example above, the following MOUNT command would be issued:

C MOUNT VISICALC.navy1:3

TRSDOS floppy disk drives may also be used under CorDos. CorDos has special volumes called FLOPPY0, FLOPPY1, FLOPPY2, and FLOPPY3 to correspond to the four floppy diskettes possible under TRSDOS. If TRSDOS drive 0 (the disk drive made into the cabinet of the Radio Shack Model II) is to be used, the user must issue the CorDos command

C MOUNT FLOPPY0:#

where # is a number from 0-7 to indicate which CorDos drive is to contain volume FLOPPY0. CorDos drive 0 should be reserved for volume NETWORK since NETWORK contains the operating system files. Some commercial software packages contain the necessary operating system files and must be MOUNTed on CorDos drive 0. SCRIPSIT is an example.

3. C MOUNT *:#, where * indicates the name of the volume on drive #, is the CorDos command to un-MOUNT a CorDos volume. This command performs a function analogous to the manual task of removing a diskette from the disk drive. This command is used if it is desired to un-MOUNT a volume and not MOUNT another volume in its place. It is not necessary to un-MOUNT a volume if another volume is to be MOUNTed in its place. One reason for using the un-MOUNT command is that many TRSDOS file commands can be given without a drive specification. TRSDOS will search all drives starting with drive 0 until the file in question is located. If the user wants to ensure that the action to be taken by the command issued is not taken on a particular volume, that volume can be un-MOUNTed before the command is issued. An example of the un-MOUNT command is:

C MOUNT *:2

This command removes the volume from drive 2 but leaves drive 2 connected.

4. C LMOUNT is the command which displays a directory of all drives which are connected and the volumes MOUNTed. An example of the C LMOUNT command is given below:

= TERMINAL 01 ON-LINE VOLUMES =

DRIVE #	VOL #	TYPE	NAME	SIZE	STATUS	ACCESS
0	9	2	NETWORK	5	SHARED	WRITE
1	10	2	UTILITY	5	SHARED	WRITE
2	20	2	CM529	5	SHARED	WRITE
3	15	2	SCRATCH	5	SHARED	WRITE
4	16	2	DATABASE	5	SHARED	WRITE
5	17	2	WPDOC1	5	SHARED	WRITE
6	18	2	TEXTMHE	5	SHARED	WRITE
7	19	2	TELETERM	5	SHARED	WRITE

Total Blocks On-Line = 40

The output from the C LMOUNT command above shows that eight CorDos drives are connected. The column headings have the following meanings:

DRIVE # -- indicates which of the eight "simulated" drives are MOUNTed.

VOL # -- shows the volume number identification.

TYPE -- indicates the type of volume. Type will always be 0 or 2. The number 2 indicates that the volume is a CorDos 1.2 volume. The number zero indicates a floppy diskette volume.

NAME -- indicates the name of the volume. Volumes are assigned names when they are created.

SIZE -- indicates the size of the volume. Volumes are measured in blocks, where a block is approximately 100,000 bytes. Five blocks is approximately the size of one TRSDOS floppy diskette.

STATUS -- indicates whether the volume is available to more than one user simultaneously. Status can be SHARED, which indicates that the volume is available to more than one user simultaneously, or LOCKED, which indicates that the volume can be used by one user only. CorDos 1.2 is a network operating system. Since only one microcomputer is on the network, the status parameter is meaningless. All volumes have a status of SHARED.

ACCESS -- indicates whether the user can change the volume by adding to or modifying files. Access will be either WRITE or READ. WRITE access allows the user both READ and WRITE privileges; READ access allows a user to use the volume but not to modify it. Limiting access to READ is one way to guard against making accidental changes to the files on a volume. A user may wish to attach a program volume with a READ access and write output to a data volume which has both READ and WRITE permissions.

The command:

C MOUNT volname:# R

is used to indicate READ only access. If R is not used, the user has both READ and WRITE access to the volume.

All MOUNT commands can be combined into a single command line by using commas to separate the commands. For instance, the command

MOUNT 8,vol1:0,vol2:1,vol3.navy10:2,FLOPPY0:3 R

makes eight drives available; MOUNTs vol1 on drive 0, vol2 on drive 1, vol3 (which is password protected with the password "navy10") on drive 2 and the floppy diskette in floppy diskette drive 0 on CorDos drive 3; and limits access to the floppy diskette to READ only.

2.4.2 System Management Commands

Four commands deal with system management: C DIR, C HIRAM, C MDRAM, C LORAM.

C DIR -- This command displays the names of all of the CorDos volumes.

The command C DIR [PRT] sends the volume directory to the printer for a printed copy. The C DIR command is similar to the manual task of looking through a listing of diskette titles. The management of CorDos volumes is much easier than the management of diskettes under TRSDOS. Under TRSDOS, diskettes may not be labeled properly or at all or diskettes may be misfiled or misplaced. Neither of these problems could occur under CorDos, since all volumes must be named and are on the Corvus drive at all times. (NOTE: The C DIR command displays the directory very rapidly. The display speed can be controlled with the HOLD key on the microcomputer. The HOLD key stops the scrolling of the display and continues it when the key is pressed again.)

C LORAM, C MDRAM, and C HIRAM are CorDos commands dealing with Random Access Memory (RAM) management and will be discussed as a group. CorDos uses some of the microcomputer's available RAM. Some programs and utilities are written to use RAM location required by CorDos. If CorDos's location in RAM could not be changed, CorDos would not be compatible with some programs and utilities. The three RAM commands allow the user to select one of three locations in RAM for CorDos's use to maintain compatibility with certain software. The C LORAM command allows TRSDOS utilities such as HOST, SPOOL, SETCOM, and DEBUG to run unaffected. The C MDRAM command overlays the SETCOM region of RAM, which means that any task requiring the serial ports will not function concurrently with the C MDRAM command. The C HIRAM command will have no affect on most programs running under TRSDOS but HOST, DEBUG, and SPOOL commands will not function when the C HIRAM command has been issued.

Users of this workstation should have little or no occasion to use RAM commands. Users should be aware of these commands so that if at some future time a commercially developed software package does not perform as expected, RAM use conflicts could be investigated as a potential cause. If this situation arises, the user should first exit CorDos and determine whether the package performs properly under TRSDOS. If it does not, check the documentation to see whether the software is for the Radio Shack Model II or some other model. If the software performs under TRSDOS, the user should re-enter CorDos and issue the proper RAM command. To determine the proper RAM command, the user should determine which of the functions (HOST, SPOOL, SETCOM) are to be used. For instance, if the user determines that the software uses the SPOOL utility, the C LORAM command should be issued.

SECTION 3

WORKSTATION USE UNDER CORDOS 1.2

3.1 OVERVIEW

This section addresses the workstation use under CorDos. It describes start up procedures with and without speech output and tasks such as creating new CorDos volumes, modifying existing volumes, and backing-up volumes to video tape. Although this section is addressed to all users, it is suggested that some tasks be restricted for use by the System Manager only to ensure efficient system operations in this multi-user workstation. Suggested System Manager duties are given in Appendix A.

The workstation is set up to function as a menu driven system. Once the system has been started successfully, it automatically displays a Master Menu.

3.2 MASTER MENU

The Master Menu concept greatly facilitates system use after system start up. The Master Menu, a menu of functions which can be performed at the workstation, is displayed upon start up of the system, and the user simply selects the function desired by pressing the number or letter identifying that function. It is not necessary to press the ENTER key after selecting an item from the menu. The operating system then performs all the functions necessary to load and execute the software.

The Master Menu is a powerful feature of CorDos. It enables the user of the workstation to focus on the task to be done rather than on the computer. Appendix B describes how to set up the Master Menu. The function of establishing and maintaining a Master Menu should be reserved for the System Manager since it is a system maintenance function. Users who frequently perform functions which are not on the Master Menu should inform the System Manager and request that those functions be placed on the Master Menu.

CorDos displays the prompt "CorDos Ready" after exiting a menu function except that after exiting SCRIPSIT, it re-displays the Master Menu. The Master Menu can always be displayed when the prompt "CorDos Ready" is displayed by typing the command MASMENU (MASMENU stands for Master Menu).

The following example shows how the Master Menu should be used. The user wishes to use the computer model of NAVSUP Publication 529 (CM-529) and, upon existing CM-529, to use VISICALC.

a. Start up the workstation as described in Sections 3.3.1 and 3.3.2.

b. When the Master Menu is displayed, select menu item 1, COMPUTER MODEL OF NAVSUP PUB 529.

c. After exiting CM-529, the CorDos prompt "CorDos Ready" will be displayed. Type MASMENU to re-display the Master Menu.

d. Select menu item 3, VISICALC.

e. Proceed in this manner and execute as many of the MASMENU functions as desired.

3.3 STARTUP PROCEDURES

The workstation user's manual[1] is the primary resource manual for using the workstation and all of its hardware. The workstation was initially set up to operate under TRSDOS and a workstation user's manual was prepared. The CorDos operating system was acquired later and therefore it is not addressed in the workstation user's manual.

Start up procedures are described in Section 3.3.1 first for users of the workstation who do not require speech output and then in Section 3.3.2 for the user who requires speech output.

3.3.1 Startup Procedures Without Speech Output

When speech output is not required, perform the following steps to start up the workstation.

1. Turn on the electric power to the Corvus disk drive by flipping the power on and off rocker switch located on the right side of the rear panel as the user faces the rear panel. The cooling fan will come on and its air motion will be felt. The three lights on the front panel of the Corvus will glow red for about 20 seconds and then the left two will go off and only the light labeled ready will continue to glow.

2. Turn on the printer, if it is to be used, and then follow the procedures in the workstation user's manual.

3. Turn on the microcomputer. The cooling fan will come on and its air motion will be felt. The red light on the flopply disk drive door will glow red. The monitor will be on and will display the prompt message INSERT SYSTEM DISKETTE. Push the latch on the disk drive door until it snaps open. Note that the only time the disk drive door should be opened when the red light is on is during the initial startup of the system. At other times the glowing red light indicates that the diskette is spinning. Opening the disk drive door when the diskette is spinning could destroy the diskette.

4. Insert the system startup diskette, labeled KEY 1, into the disk drive and close the disk drive door. (Appendix C of the workstation user's manual describes the proper procedures for handling the diskette.) The operating system will start loading immediately and the whirring sound of the diskette spinning will be heard. It takes about 25 seconds for the operating system to be loaded from KEY 1. The system will prompt for the date and then the time just as the system does when operating under TRSDOS. The input of the time is optional. CorDos will then display the workstation Master Menu of functions set up by DTNSRDC in establishing the workstation. The following items appear on that menu:

   1. Computer Model of NAVSUP PUB 529
   2. WORDPROCESSING (SCRIPSIT)
   3. VISICALC
   4. DATABASE (PROFILE PLUS)
   X. EXIT

5. Select the application desired. The system will configure itself by MOUNTing the correct volumes, loading the application software, and executing the software. When the user exits from the application, CorDos will return to the "CorDos Ready" prompt, except that when exiting SCRIPSIT, CorDos returns to the Master Menu.

6. If another application from the Master Menu is to be performed, type MASMENU and the Master Menu will re-appear.

7. When finished with all applications, type the command C LOGOFF. CorDos will verify that the user is ready to leave the network. C LOGOFF ensures that files are properly dated to show the date the files were created and dates of their last updates. Leaving the network by simply turning off the Corvus disk drive and the microcomputer does not harm any of the files or the system in any way. C LOGOFF, however, is the proper way to exit from CorDos.

3.3.2 Startup Procedures With Speech Output

When speech output is required, perform the following steps to start up the workstation.

1. Start the Kurzweil Reading Machine first and initiate the Speech Output System mode to enable the machine to receive input from the microcomputer. The specific steps for activating the Kurzweil Reading Machine are described in Section 3.3 of the workstation users' manual[1] and will not be repeated here.

2. Turn on the electric power to the Corvus disk drive by flipping the power on and off rocker switch located on the right side of the rear panel as the user faces the rear panel. The cooling fan will come on and its air motion will be felt. The three lights on the front panel of the Corvus will glow red for about 20 seconds and then the left two lights will go off and only the light labeled ready will continue to glow.

3. Turn on the printer following the procedures in the workstation user's manual.

4. Turn on the microcomputer. The cooling fan will come on and its air motion will be felt. The red light on the floppy disk drive door will glow red. The monitor will be on and will display the prompt message INSERT SYSTEM DISKETTE. Push the latch on the disk drive door until it snaps open. Note that the only time the disk drive door should be opened when the red light is on is during the initial startup of the system. At all other times, the glowing red light indicates that the diskette is spinning.

Opening the disk drive door when the diskette is spinning could destroy the diskette.

5. Insert the system startup diskette, labeled KEY 2, into the disk drive and close the disk drive door. The operating system will start loading immediately and the whirring sound of the diskette spinning will be heard. It takes about 25 seconds for the operating system to be loaded from KEY 2. The system will then prompt for the date. Type the date in the format MO/DA/YR (example 01/16/1984). Press the carriage return key labeled "ENTER" on the Radio Shack microcomputer. The microcomputer will now prompt for the "TIME". Since this microcomputer will not function until the date has been entered properly, speech output is not possible at this point. If a mistake is made during the input of the date, the date prompt will be issued again after you press the ENTER key. The best way to tell whether the date has been entered properly is to press the ENTER key twice. The second press of the ENTER key indicates to the microcomputer that you do not now wish to enter the TIME. If the date was entered properly, you will hear the diskette spinning. After a few seconds you will hear the printer typing and then the Kurzweil will say the items on the MASTER MENU, the same information the printer types. If these things do not happen, an error was made during the input of the date. To correct, press ENTER and re-enter the date. Note that there are two digits for the month, two digits for the day, and four digits for the year. Each item is separated from the others by a slash. Continue this process until you get the response described.

6. Move to the keyboard of the terminal/printer. CorDos will display the workstation Master Menu of functions set up by DTNSRDC in establishing the workstation. If you wish to enter the TIME, select menu item X to exit the menu and return to the "CorDos Ready" prompt. Issue the command

TIME hr.min.sec.

(NOTE: Make sure that the keyboard is in the "LOCKED" position before typing TRSDOS commands.) To return to the MASTER MENU, issue the command

MASMENU

and the MASTER MENU will appear. The following items appear on that menu:

1. Computer Model of NAVSUP PUB 529
2. WORDPROCESSING (SCRIPSIT)
3. VISICALC
4. DATABASE (PROFILE PLUS)
X. EXIT

Some commercial software packages require the special keys of the microcomputer's keyboard and cannot be executed from the Diablo's keyboard. VISICALC and SCRIPSIT are in this category.

6. Select the desired application. The system will configure itself by MOUNTing the correct volumes, loading the application software, and executing the software. When the user exits from the application, CorDos will return to the "CorDos Ready" prompt, except that on exiting SCRIPSIT, CorDos returns to the Master Menu.

7. If another application from the Master Menu is to be performed, type MASMENU and the Master Menu will re-appear.

8. When finished with all applications, type the command C LOGOFF. CorDos will verify that the user is ready to leave the network. C LOGOFF ensures that files are properly dated to show the date the files were created and dates of their last updates. Leaving the network by simply turning off the Corvus disk drive and the microcomputer does not harm any of the files or the system in any way. C LOGOFF, however, is the proper way to exit from CorDos.

After the system is initialized, most functions that can be done at the keyboard of the microcomputer can also be done at the keyboard of the printer. One exception is re-displaying the communications menu after a telecomputing session, such as executing the CM-529 software, has begun. The communication menu is re-displayed from the microcomputer by pressing the BREAK key, but pressing the BREAK key from the keyboard of the printer does not re-display the communications menu. The communication menu is displayed at the printer prior to selecting the terminal option to begin communicating. All options should be selected at that time. Re-displaying the menu after communication has begun is usually not necessary, but if it is required, it must be done from the keyboard of the microcomputer.

3.4 CREATING CORDOS VOLUMES

Establishing, modifying, or deleting volumes is one of the major responsibilities of the CorDos System Manager. CorDos volumes can range in size from 100,000 bytes to 16.5 megabytes.

New CorDos volumes can be created from unused capacity on the Corvus by combining existing volumes into a new volume or by dividing an existing volume into new volumes. Creating new volumes by combining or dividing existing volumes will destroy any files in the modified volumes. Files in any volume to be modified should be moved to a temporary location until after the modification is complete and then moved back to the modified volume.

The first 12 volumes are required by CorDos and should not be changed in any way.

To create a new CorDos volume, the following procedures should be followed:

1. Display the volume Configuration Menu by issuing the command MENU0 from the "CorDos Ready" prompt. CorDos displays:

```
=Volume Configuration Menu=

     1. Define Volumes
     2. Create Volumes
     3. Instructions
```

2. Select 1 (Define Volumes). CorDos displays the data fields for record 1 which is volume 1 of the CorDos volumes.

3. Locate the first free record which is the record following the record for the last CorDos volume. The first free record is easily recognized because none of the data fields contain any data. To reach the first free record, use the DOWN ARROW key to page through the records in ascending order. Each time the DOWN ARROW key is pressed, the next record is displayed. The UP ARROW key can be used to page through the records in descending order.

4. When the first free record is reached, it must be filled out with the data describing the new volume to be established. Figure 2 is an example of a volume record. It is not necessary to fill in all fields. Some fields are optional and others are computed fields. The following fields must be filled in:

Volume Name - the user-chosen name for the volume. Dots indicate the maximum number of characters for the volume name and for other data items.

Device Name - always DRIVE001 for a one-drive Corvus system.

Volume # - refers to the sequential order of the volumes in the directory of volumes.

Start BLOCK - identifies the starting address of the volume relative to the beginning of the Corvus drive. This number is the sum of the start block and length in BLOCKS of the preceding volume.

Length BLOCKS - identifies the number of BLOCKS to be allocated to the volume. One block equals 98,304 bytes. Five BLOCKS are approximately equal to the size of one floppy diskette.

TYPE - All user created volumes will be TYPE 2.

When the data for the fields are typed, the cursor will move automatically to the next field if the entire field is filled in; otherwise the ENTER key must be pressed to move the cursor to the next field. The cursor does not move to computed fields. The data for those fields will be computed and filled in when all data have been entered for the volume record.

5. Press CONTROL U when the data for all fields have been entered. CONTROL U is one of the commands listed in a menu of commands displayed across the bottom of the screen. This menu shows the functions which can be performed on the record displayed. The CONTROL U command tells CorDos to update the Volume Directory with the new record.

6. If other volumes are to be defined, press the down arrow key to bring up the next blank record. When volume defining is completed, press the break key to exit the record screen. The word BREAK flashes at the bottom of the screen. The BREAK command will be canceled if a key other than the BREAK key is pressed. Pressing the BREAK key again will cause CorDos to exit the volume records and to return to the Volume Configuration Menu.

7. Press menu item 2 (Create Volumes). Press F2 when prompted. CorDos returns to the Volume Configuration Menu.

8. Press X to exit the Volume Configuration Menu. All newly created volumes must now be MOUNTed (See Section 2.4 for instructions on MOUNTing CorDos volumes) so that the final step in volume establishment can be accomplished. Only six new volumes can be MOUNTed at a time since volumes NETWORK and UTILITY must be on CorDos drives 0 and 1, respectively, for the volume creation process. If more than six volumes must by MOUNTed, this step and the following step must be repeated until all new volumes have been MOUNTed.

9. Type ZDIR. CorDos responds with DRIVE #. The purpose of this step is to tell CorDos to write a blank directory for each of the new volumes. In response to the CorDos prompt, DRIVE #, enter the drive number of the drive containing a newly created volume. This step must be done very carefully since it destroys any files that may be in the volume. The ZDIR command must be issued for each new volume. Another use of the ZDIR command is to erase all the files from a volume. For instance, if volume SCRATCH contains no files that are to be maintained, the ZDIR command can be used to delete all the files from that volume.

= CorDos 1.2 Utility - LIST/EDIT Volume =

Volume Name	: DATA3	Device Name	: DRIVE001
Volume #	: 027	Start BLOCK	: 115
Start FRAME	: 22080	Length BLOCKS	: 5
Length Frames	: 960.0		
Type (0-4)	: 2		
Created	: 85/03/26	Bytes/sector	: 256.
Updated	:	Sectors/gran	: 5.0
Stored	:	Sector/track	: 25.00
Media ID	:	Interleave	: .00
Index	:	1st Dir Trk	: 0
		2nd Dir Trk	:
Status	:	Max Dir Entries	: 96.
Users	:		

Figure 2 - Sample CorDos Volume Record

3.5 TRANSFERRING FLOPPY DISKETTE FILES TO CORDOS VOLUMES AND VICE VERSA

CorDos volumes are dealt with just as floppy diskettes are under TRSDOS. Under CorDos, floppy diskettes are also CorDos volumes. This means that files, whether on floppy diskette or not, can be moved from volume to volume using TRSDOS commands. Files on floppy diskettes can therefore be moved to volumes on the hard disk drive with TRSDOS commands. The only CorDos command necessary is the MOUNT command to set up access to the source and destination volumes, where the source volume is the volume which contains the files to be moved and the destination volume is the volume to which the files are to be moved. For example, to move files from a floppy diskette to CorDos volume MILCON, the floppy diskette (designate FLOPPY0 by CorDos) is the source and MILCON is the destination. The file transfer can be accomplished by the following commands:

```
C MOUNT 4,FLOPPY0:2,MILCON:3

MOVE :2 :3 ALL PROMPT
```

The first command sets up access to the source and destination volumes.

CorDos re-displays the "CorDos Ready" prompt after the first command is executed. The MOVE command moves all user files from CorDos drive 2 to CorDos drive 3. (Note: CorDos drive 2 is TRSDOS drive 0 in this example.) The parameter ALL is required; the parameter PROMPT is optional. PROMPT tells CorDos to display each file name before it is copied and to give a set of options. The options are Y/N/S/Q which mean:

Y - Yes, Copy

N - No, do not Copy

S - Stop, do not prompt any more but proceed with copying all files

Q - Quit, no more copying and exit from the MOVE command

The MOVE command moves user files only. System files will not be moved. System files are already on volume NETWORK and are not normally needed on other volumes. System files that are not password protected by Radio Shack can be moved to the hard disk volumes with the TRSDOS COPY command. All TRSDOS commands are described in the Radio Shack Model II Owner's Manual.[4]

3.6 CORVUS MIRROR

The Corvus MIRROR data backup system is used to backup data from the Corvus disk drive to a VCR tape. Periodic backups should be made to protect against the loss of data if the Corvus malfunctions or if for some other reason all the data and files on the Corvus are lost.

File backup, as well as all other Corvus MIRROR functions, are System Manager functions and should be performed only by the System Manager or by someone who has been trained and approved by the System Manager for Corvus MIRROR functions. Individual users should have knowledge of the file backup function but should not be authorized to use it due to the potential for the unrecoverable loss of files if MIRROR functions are done improperly.

A good procedure for the System Manager to follow in making backups is to reserve the workstation for use during the last 45 minutes of a work day and do a complete backup of all volumes on the hard disk drive. In this way, a backup is created for all files on the Corvus and the time and number of video tapes needed are minimized.

One of the hazards to the use of small computer systems is that the data storage system is usually so reliable that making daily backups seems unnecessary. The inevitability of some type of file loss due to hardware problems or human error demands that a reliable backup system be maintained. The Corvus MIRROR provides such a system.

A good backup system is the so-called GRANDFATHER-FATHER-SON backup system. This system requires having three video tapes available for the data storage of backup files. Each tape is labeled GRANDFATHER, FATHER, or SON. Alternatively, the tapes could be labeled 1, 2, and 3. On the first day, the GRANDFATHER tape is used for the backup. On the second day the FATHER tape is used and the GRANDFATHER tape remains as a backup. On the third day, the SON tape is used and the GRANDFATHER and FATHER tapes remain as backups. On the fourth day, the cycle starts repeating by re-using the GRANDFATHER tape. The GRANDFATHER-FATHER-SON system provides for backups to the backup system. Figure 3 is a log which can be used by the System Manager to manage the GRANDFATHER-FATHER-SON backup system.

A concern about any backup system is to ensure that all backups are not subject to being lost to one threat. For instance, video tapes are subject to theft and loss or failure due to exposure to magnetism. The System Manager should ensure that one threat will not threaten all the backups simultaneously. One way to avoid such threat is to have a separate and appropriately secure location for each backup tape.

VIDEO TAPE ID	DATE	COMMENTS
GRANDFATHER		
FATHER		
SON		
GRANDFATHER		
FATHER		
SON		
GRANDFATHER		
FATHER		
SON		
GRANDFATHER		
FATHER		
SON		
GRANDFATHER		
FATHER		
SON		
GRANDFATHER		
FATHER		
SON		
GRANDFATHER		
FATHER		
SON		
GRANDFATHER		
FATHER		
SON		

Figure 3 - Corvus Hard Disk Drive Backup Log

3.6.1 Files Backup

The CorDos backup utility is initiated by executing the file MIRROR2 which is on the CorDos volume UTILITY. UTILITY must be on CorDos volume 1 for the backup utility to function. CorDos volume NETWORK, which contains the system files needed to carry out system commands, must also be on CorDos drive 0. NETWORK is placed on CorDos drive 0 during system start up and should not be moved.

The following procedures should be used to backup the Corvus hard disk drive to video tape:

1. Issue the CorDos command: C MOUNT 2,NETWORK:0,UTILITY:1

This command gives the microcomputer access to all files and utilities needed to perform the backup.

2. Issue the command: MIRROR2

The MIRROR2 command calls the backup utility. CorDos responds by showing the MIRROR2 menu as follows:

```
B: BACKUP
V: VERIFY
I: IDENTIFY
R: RESTORE
Q: QUIT
SELECT (L to LIST) --->
```

NOTE: L is used to list (re-display) the MIRROR menu.

3. Select menu item B. CorDos will then prompt for the information it needs to do the backup as follows:

a. Backup entire drive Y/N.

Unless the drive is full or almost full, answer N.

b. Drive Number?

Always answer 1. The workstation has only one Corvus disk drive of a possible four. Corvus drives are numbered 1-4.

c. Start Frame Number?

Answer 0 if all volumes are to be backed up. Individual volumes may be backed up or several consecutive volumes may be backed up. The start frame number must always be entered. Appendix C describes one way to determine the start frame number if the backup is to start with a volume other than the first.

d. Number of Frames?

The number of frames is the ending frame number of the last volume to be backed up minus the start frame number. (See Appendix C for a discussion of frame numbers.) The normal procedure is to backup all volumes. The frame numbers for the beginning and ending of a volume are fixed once the volume is established and do not change as the files on the volumes change. Therefore, the System Manager should note the ending frame number for the last volume created and use this number as the number of frames when all volumes are to be backed up.

e. Enter Tape Header Information

Four items of information are requested. The first two, date and time, are filled in by CorDos. The third item is NAME. Enter a short name (16 characters) to identify the video tape file. Names such as GRANDFATHER, FATHER, or SON can be used. The next item is COMMENT. One line is available for comments to help describe the image to be recorded on the video tape.

f. Normal or Fast Backup? (N/F)

The Normal option should always be selected. It provides for greater reliability than the Fast option. CorDos will then display

Start Recorder and press ENTER

to prompt the user to prepare the VCR for recording from the Corvus disk drive. Start the VCR by pressing the power switch. Insert a video tape and rewind to its beginning. (NOTE: More than one backup of the Corvus can be made on one tape, but it is not advisable to do so since the loss or failure of that one tape would affect all backups on that tape. If more than one backup (individual volumes, for instance) is made on one tape, use the VCR's digital tape counter so that the beginning of each separate backup can be located.) Put the VCR into the record mode by pressing the RECORD and PLAY switches simultaneously. The VCR will display REC to indicate that it is in the record mode. Press the ENTER key on the microcomputer. CorDos will display:

WAITING FOR RECORDER TO SPEED UP

for a few seconds and then display

BACKUP HAS STARTED

which will remain on the screen until the backup has been completed. The ready and busy lights on the Corvus flash during backups and at other times when data are being exchanged between the microcomputer and the Corvus. It takes about 37 minutes to backup the entire 20 megabytes.

3.6.2 Files Restoration

The files restoration function is used to restore files previously recorded on video tape to the Corvus. This function should not have to be used often since under normal operations volumes should not have to be restored unless a file loss occurred.

As users become more experienced with the workstation, other uses of the file restoration function may be generated. For instance, if the Corvus becomes full, VCR tapes can be used as auxiliary storage for files, especially infrequently used files. These auxiliary files can be restored to the Corvus as needed. The use of video tapes for auxiliary storage is illustrated as follows: Suppose that volume A contains word

processing files which are not frequently used and that the Corvus is full. One way to save volume A and free the disk space for new word processing files is to make a backup of Volume A on video tape using the backup utility. All files on volume A can then be deleted from the Corvus so that the entire capacity of volume A can be used for new word processing files. When files on the original volume A, which now reside on video tape, are needed, the current volume A can be backed up to tape and the original volume A restored to the Corvus. When use of the original volume A is completed, the new volume A can be restored to the Corvus. The interchange of individual volumes between the Corvus and video tapes can be done in less than 5 minutes. With efficient management of files, the 20 megabytes of the Corvus should be sufficient for years at current and anticipated work levels, but efficient use of the BACKUP and RESTORE utilities of the Corvus MIRROR provides for virtually unlimited storage. However, if on-line storage requirements increase dramatically, additional Corvus drives should be considered. CorDos can support four drives for a total of 80 megabytes.

3.6.3 Verify

The MIRROR function VERIFY is used to test the video tape to determine whether it is readable by the VCR. VERIFY does not test to determine whether the tape contains what was transferred from the Corvus. VERIFY detects flaws in the tape which would make it unreadable by the VCR.

The Corvus MIRROR is so reliable that it is not necessary to execute the VERIFY function unless there is some reason to believe that the tape is defective. The BACKUP function writes three redundant copies of all data to tape and the RESTORE function will go to the redundant copies if the primary copy of the data is unreadable. Upon restoration of tape images to the Corvus, CorDos displays how many times it had to go to a redundant image by displaying the number of errors encountered.

These errors are referred to as soft errors. If after a RESTORE operation CorDos displays three soft errors, it means that three times during the transfer of all bits of data, CorDos had to read redundant copies of three bits.

3.6.4 Identify

The MIRROR function IDENTIFY is used to display the Tape Header Information recorded on the tape during the BACKUP function. The Tape Header Information is the electronic label on the tape. The IDENTIFY function is useful in identifying tape files when the physical label attached to the tape cassette is either missing or not filled out.

3.6.5 Quit

The MIRROR function QUIT is used to exit from the MIRROR utility. Upon exit, CorDos returns to the "CorDos Ready" prompt.

APPENDIX A

SYSTEM MANAGER'S FUNCTIONS FOR THE COMPUTER AIDED WAREHOUSE DESIGN WORKSTATION

1. BECOME THE LOCAL EXPERT ON THE WORKSTATION AND ITS COMPONENTS

This function involves studying the workstation User's Manual, DTNSRDC Report 84/080. The User's Manual provides correct operational procedures and trouble shooting information for all components of the workstation except the Corvus hard disk drive and the Video Cassette Recorder data backup system which are addressed in this report. By studying these two reports, the System Manager can easily become an expert on the system components.

The Radio Shack Model II Owner's Manual[4] is the third most important document to the workstation System Manager. The System Manager should use this document to learn TRSDOS commands, the operating system for the microcomputer. Although users of the computer model of NAVSUP pub 529 (CM-529) can execute the model without knowing TRSDOS, CorDos, or little else about computers, the System Manager should know the operating system and be prepared to assist other users in their applications.

2. ENSURE THAT OTHER USERS USE THE WORKSTATION PROPERLY

This supervisory function includes establishing rules for use of the workstation. Rules are required to protect equipment from unintentional abuse and to ensure efficient and correct data processing procedures. Rules may be required for such issues as

a. food and beverages in the workstation.

b. smoking in the workstation.

c. scheduling of priority tasks.

d. managing disk storage space as the disk requirement approaches capacity.

3. MAINTAIN A LIST OF RESOURCE PERSONS AND COMPANIES TO CALL FOR ASSISTANCE AND PROBLEM RESOLUTION

This task involves maintaining a list of contacts for equipment and special software.

4. PERFORM ALL DATA PROCESSING FUNCTIONS WHICH HAVE BEEN DENIED TO OTHER WORKSTATION USERS

Updating the data files of CM-529 is an example of this function. These files can be updated by the Data Files Update Model as data items change, such as labor rates, equipment cost, equipment time and motion data, etc. When these data items are changed, all subsequent runs of CM-529 are affected, therefore, changes to the data files must be centrally managed to ensure the validity of the model.

Changes to the Corvus disk drive configuration (creating new volumes, modifying existing volumes, and deleting volumes) affect all users and should be centrally controlled.

5. KEEP NAVSUP 0622 INFORMED OF WORKSTATION OPERATIONS

This function involves keeping NAVSUP 0622 advised of the workstation's use, of existing or potential problems, and of recommendations developed.

APPENDIX B

CORDOS MASTER MENU SETUP PROCEDURES

The MASTER MENU is set up by the User Menu facility of the PROFILE PLUS database management system. To enter the PROFILE PLUS system, go to the MASTER MENU and select menu item 4 DATABASE, (PROFILE PLUS). The PROFILE PLUS menu will be displayed. Select the "+" item from the menu. PROFILE PLUS will then prompt for the data base name. Enter MASMENU. PROFILE PLUS will display the data set up which generates the current MASTER MENU. These data can be edited at this point to modify the MASTER MENU.

The ENTER key and ARROW keys can be used to go to the data item to be changed or to the place where new data are to be added. Note that dots are displayed to indicate allowable line lengths. The first data item for the menu is the name or identification of the menu. Two lines are allowed. A good practice to follow in naming a menu is to give a descriptive name for the menu on the first line and the date of the last update to the menu on the second line. For example, the menu could be identified as follows:

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The individual items on the menu are defined next. Two lines are allowed to define each menu item. On the first line, the number or alphabet character used to identify an item on the menu must be entered. After entering a number or character, press the ENTER key to move the cursor to the next data area on the same line. A name for the function to be performed by that menu item must be entered. An example of the first line of the two menu definition lines is:

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The second line of the menu item identification must contain the commands that must be executed by CorDos when the menu item is selected. The first command must be K/EFC, a PROFILE PLUS command. CorDos, TRSDOS, and software commands must follow. The character "¦" (the upper case character on the key next to the HOLD key) must be used whenever the ENTER key is needed to end a command. A symbol is used to represent the ENTER key because the ENTER key must be used to end the command line when all commands have been entered. All commands must be on one line which cannot be continued. An example of a command line is:

K/EFC C MOUNT 4,NETWORK:0,VISICALC:1¦VC

The procedure is repeated for each menu item up to a maximum of 12. If the commands needed for a menu item do not fit within the line length allowed, exit from PROFILE PLUS by pressing the ESC key. The commands needed can be put into a command file using the TRSDOS BUILD command. PROFILE PLUS is then re-entered and the Master Menu set-up procedure continued. The commands which did not fit within the space allocated on one line are now in a command file and can be executed with the TRSDOS DO command. The combination of the BUILD and DO commands can be used to execute any number of commands or command files. This feature can be used with some applications to program the entire data processing session to take place with little or no user interaction.

The MASTER MENU is limited to 12 menu items per menu screen. If more menu items are needed, then the 12th item of the menu can be "PAGE 2 OF THE MENU" and calls the second page of the menu. The command to be executed when menu item 12 is selected must be the name of the file containing the commands creating the second menu screen. The commands for each menu screen must be in separate files. As many menu items as necessary can be displayed using this procedure.

The menu set-up screen can be exited at any time by pressing the ESC key. The ESC key updates the menu command file and returns the user to the "CorDos Ready" prompt. A good procedure to follow when the Master Menu file is to be changed is to copy the file MASMEMU to a temporary file before it is changed. In that way, the existing MASMENU file is available until the new MASMENU file is operational.

APPENDIX C

DETERMINING CORDOS FRAME NUMBERS

The Video Cassette Recorder (VCR) stores data from the Corvus in Video storage images called frames. CorDos stores data on the Corvus in units called BLOCKS. One CorDos BLOCK is equal to 192 frames. One frame is equal to 512 bytes. To store volumes from the Corvus onto the VCR, the Start Frame as well as the number of frames must be known. This appendix describes how to determine the appropriate frame numbers for storing volumes to video tape and for restoring files from video tape back to the Corvus.

START FRAME NUMBER

The start frame number must be known for storing or restoring volumes. When volumes are stored, the start frame gives the position on the Corvus disk at which to begin sending a copy of the data to video tape. When restoring volumes, the start frame tells where to begin placing data from the video tape on the Corvus disk. The information needed to determine the start frame number for storing volumes on video tape or restoring volumes from video tape to the Corvus disk is contained in the CorDos Volume Directory which can be displayed on the screen by issuing the command

C DIR

The Directory scrolls rapidly but can be stopped and re-started with the HOLD key. The Volume Directory can be printed on paper by typing

C DIR [PRT]

The volume directory shows 13 data items for each volume. The first six data items are the only ones of concern when computing frame number:

1. VOL - shows the volume number in the sequential list of volumes.

2. DRV - shows which Corvus drive contains the volume of interest.

3. START - shows the start frame number for the volume of interest.

4. LENGTH - shows the length of the volume in BLOCKS.

5. TYPE - shows the volume type. Volume TYPE is not used in computing start frame numbers.

6. NAME - shows the volume name, which is the primary volume identification information.

To restore volumes from video tape to the Corvus, the start frame must be determined to coincide with the start frame of a volume, but it is not necessary that volumes on video tape be restored to CorDos volumes of the same name. For instance, if it is desired to compare the contents of volume A as it exists currently with the way it existed when it was last stored on video tape, the video tape version is restored to a scratch volume of the same or larger size. Now both versions are on the Corvus and can be compared.

To determine the START FRAME NUMBER of the Corvus disk for either back up to video tape or restoration from the video tape, first determine the START BLOCK. If all volumes are to be backed up or restored, the START FRAME NUMBER is always 0; otherwise, it is the START BLOCK as shown in the Volume Directory for the first volume to be backed up or the volume on which the restoration is to begin. After the START BLOCK is determined, it must be converted to frames. One BLOCK equals to 192 frames, therefore the start frame is equal to 192 times the number of BLOCKS.

NUMBER OF FRAMES

To determine the number of frames to be backed up to video tape or restored to the Corvus, the number of BLOCKS must be determined first. The number of BLOCKS is the difference between the START BLOCK for the first volume to be backed up or restored and the ending BLOCK number for the last volume be backed up or restored. If the entire Corvus is to be backed up or restored, the START BLOCK is 0; otherwise,

it is the START BLOCK as shown in the Volume Directory for the first volume to be backed up or restored. The ending BLOCK number is the sum of the START BLOCK number of the last volume to be backed up or restored and the LENGTH of that volume. The number of BLOCKS is the difference between the ending BLOCK number and START BLOCK number. This difference must be converted to frames by multiplying by 192 to get the number of frames to be backed up or restored.

SAMPLE PROBLEM 1

Assume that you wish to back up the entire used portion of the Corvus disk and that volume DATA3 is the last volume on the disk. What is the START frame number and the NUMBER OF FRAMES? The volume directory data are shown for volume DATA3.

= VOLUME DIRECTORY =

VOL	DRV	START	LENGTH	TYPE	NAME
023	1	115	5	2	DATA3

SOLUTION

When it is desired to back up all volumes, the START frame is always 0 since the START BLOCK is 0. The NUMBER OF FRAMES is computed by determining the number of BLOCKS and multiplying it by 192. The number of BLOCKS is equal to the sum of the START and LENGTH for the last volume, which is DATA3 in this example. The START for DATA3 is 115 and its LENGTH is 5. Therefore, 120 BLOCKs are to be backed up, which equals 23040 (120 times 192) frames.

SAMPLE PROBLEM 2

What are the START frame number and the NUMBER OF FRAMES if you wish to store only volume DATA3 to video tape? Use the volume directory data shown for sample problem 1.

SOLUTION

The START BLOCK (115) and LENGTH in BLOCKS (5) are read directly from the Volume Directory. These two numbers must be converted to frame numbers. One BLOCK is 192 frames; therefore, the START frame number is 22080 (192 times 115) and the LENGTH IN FRAMES or the number of frames to be backed up is 960 (192 times 5).

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